Flare 8 Root Cause and Corrective Action Analysis Report – NSPS Ja

February 24, 2021

In accordance with Title 40, Part 60, Subpart Ja, provided below is information related to the discharge to the No. 8 Flare in excess of 500 lbs in a 24-hour period in accordance with §60.103a(c) and the recordkeeping and reporting requirements of 40 C.F.R. §60.108a(c)(6). This report also includes information required under the Consent Decree entered in United States, et al. v. HOVENSA, LLC, Civ. No. 1:11-cv-0006.

a. A description of the discharge [40 CFR §60.108a(c)(6)(i)]

On February 24, 2021, pressure relief valve PSV 269, on the No. 6 Distillate Desulfurizer (6DD) Unit makeup compressor suction drum (D-4605,) was removed from service for maintenance. Unit shutdown procedures were utilized to safely shut down and secure the unit. Safety protocols were followed by venting D-4605 via a bypass line to Flare 8. The process resulted in an increase in the H_2S concentration to flare. The PSV was serviced and re-installed.

b. The date and time the discharge was first identified and the duration of the discharge [40 CFR §60.108a(c)(6)(ii)] & [Consent Decree Paragraph 60.a]

The discharge was first identified on February 24, at 19:00 hours and lasted until February 24, 2021 at 20:59 hours.

c. The measured or calculated cumulative quantity of gas discharged over the discharge duration. Include measured H_2S, Total sulfur, SO_2, and flow rate as applicable. [40 CFR §60.108a(c)(6)(iii)-(vii)] and calculations used to determine the quantity of SO_2 that was emitted. [Consent Decree Paragraph 60.b]

Appendix 1 to this document includes the data recorded by the data acquisition and handling system related to the continuous monitoring system located at Flare 8. SO_2 emissions are calculated using the total reduced sulfur quantity measured by analyzer in the flare header, the total flow to the flare, and a 99% conversion of total sulfur to SO_2 per 40 CFR §60.108a(c)(6)(vii.)

d. The steps taken to limit the emissions during the discharge and the duration of the discharge. [40 CFR §60.108a(c)(6)(viii)] and [Consent Decree Paragraph 60.c]

Operations followed proper unit procedures to safely shut down the unit to conduct necessary maintenance work.

e. The root cause analysis and corrective action analysis including an identification of the affected facility, the date and duration of the discharge, a statement noting whether the discharge resulted from the same root cause(s) identified in a previous analysis and either a description of the recommended corrective action(s) or an explanation of why corrective action is not necessary. [40 CFR §60.108a(c)(6)(ix)] and [Consent Decree Paragraph 60.d]

1. *H_2S and other sulfur species were released to Flare 8 from the 6DD.*
2. *The release occurred from Flare 8, an affected facility under NSPS, Subpart Ja.*

3. *The duration of the event was 2 hours as described in "b" and "c" above.*
4. *This discharge resulted from a unit shut down event.*
5. *The root cause analysis:*

Root Cause Analysis	*Corrective Action Analysis (or explanation that no corrective is necessary)*	*Status: completed within 45 days or schedule with proposed implementation and completion dates*
DD6 was shut down to allow safe repairs to the 6 DD makeup compressor suction drum (D-4605) pressure safety valve PSV 269.	• *During DD6 shut down, unit shutdown protocols were followed which included venting the unit to Flare 8.* • *As addressed in Event 21, PSV 269 was removed from service and repairs were made before restarting DD6.*	*Completed within 45 days*

f. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of the discharge resulting from the same root cause or significant contributing causes in the future. The analysis shall discuss all reasonable alternatives, if any, that are available, the probable effectiveness and cost of the alternatives, and whether an outside consultant should be retained to assist in the analysis. Possible design, operation and maintenance changes shall be evaluated. [Consent Decree Paragraph 60.e]

Corrective measures are not necessary since this event was related to the shutdown of DD6 to conduct necessary maintenance work and Operations followed proper unit shutdown procedures.

g. For Acid Gas Flaring Incidents (not Hydrocarbon Flaring Incidents), specifically identify each of the grounds for stipulated penalties in paragraphs 63, 64 and 65 and describe whether the Incident falls under any of those grounds. [Consent Decree Paragraph 60.f]

Not applicable.

h. For any corrective action analysis for which corrective actions are required, a description of the corrective action(s) completed within the first 45 days following the discharge and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. [40 CFR §60.108a(c)(6)(x)] and [Consent Decree Paragraph 60.h for supplement report]

See response to "e" above.

i. If the analysis determines that corrective action is not required, the report shall explain the basis for that conclusion. [Consent Decree Paragraph 60.e]

See response to "e" above.

j. For each discharge from a flare that is the result of a planned startup or shutdown of a refinery process unit or ancillary equipment connected to the flare, a statement that a root

cause analysis and corrective action analysis are not necessary because the owner or operator followed the flare management plan. [40 CFR §60.108a(c)(6)(xi)]

Not applicable.

Appendix 1 – DAHS Records

Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/24/2021 19:00 Through 02/24/2021 20:59

Source		FLARE08					
Parameter (Unit)		H2SPPMD (PPM) 001H	H2SPPMD (PPM) 003H	TRSPPM (PPM) 001H	SO2LBS (LBS) 001H	SO2LBS (LBS) 024H	
02/24/21	16:00	16.4	54.0	162.3	13.0	488.0	
02/24/21	17:00	15.0	25.4	159.6	12.8	496.1	
02/24/21	18:00	12.1	14.5	140.7	11.2	500.0	
02/24/21	19:00	10.8	12.6	135.6	10.7	502.9	E
02/24/21	20:00	8.9	10.6	131.0	10.4	503.2	E
02/24/21	21:00	8.3	9.3	129.6	10.0	496.0	
02/24/21	22:00	8.3	8.5	131.8	8.6	486.7	
02/24/21	23:00	6.9	7.8	128.0	10.3	478.0	

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
U - Startup
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
D - Shutdown